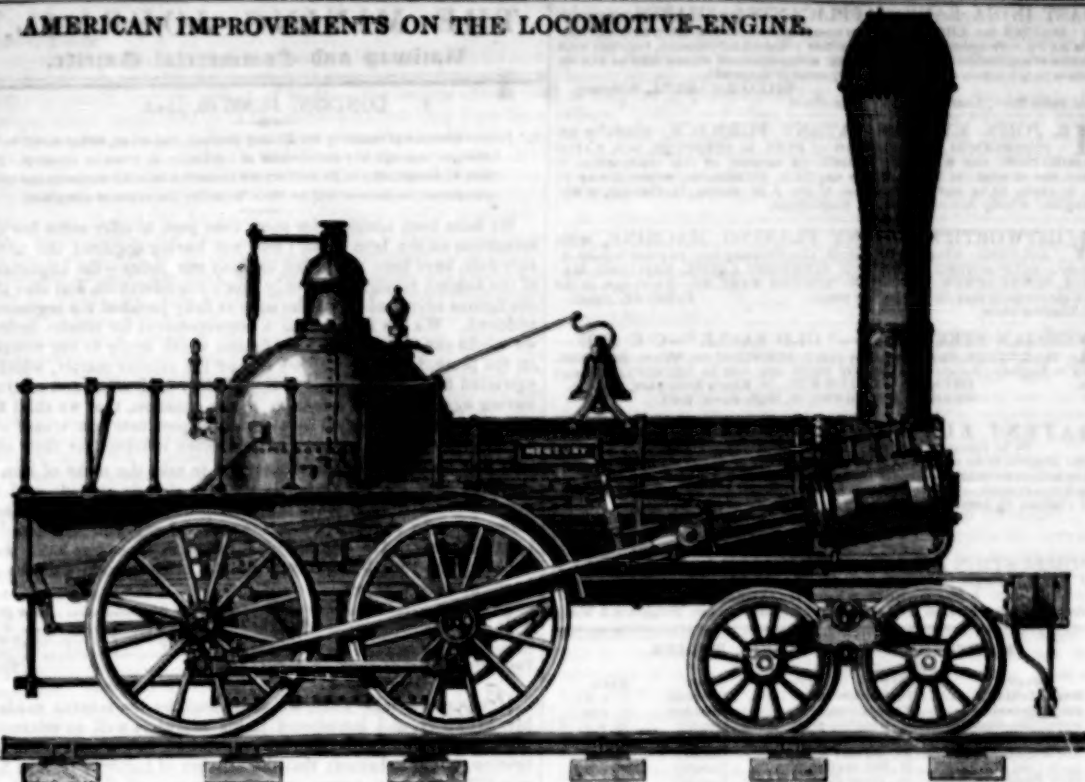


[PRICE 6D.]

IMPROVEMENTS ON THE RIVER LIFFEY, &c. in the city

AMERICAN IMPROVEMENTS ON THE LOCOMOTIVE-ENGINE.



LETTER FROM CHARLES MORRIS, ESQ., ENGINEER, EASTWICK AND HARRISON, LOCOMOTIVE BUILDERS, PHILADELPHIA.

GENTLEMEN,—In complying with your request to give you my opinion about your locomotive-engines, I feel called upon to state the grounds that make this opinion what it is. I do this in view of the interests of science, not intending to pass a mere encomium upon the productions of your establishment. Every engineer is, no doubt, conversant with the fact, that the power of a locomotive-engine not only depends on the harmonious proportions of boiler and cylinders, and on the clever mechanical arrangement to work the pistons and transfer motion to the driving-wheels; but every engineer must be also aware of the importance of another fact—viz., the manner in which this power is made available, in order to draw a maximum load at a maximum speed, on a railroad. In examining this point, we find that a fulcrum is required to enable the steam-power to act upon the weight, or the load to be drawn. This fulcrum in the locomotive-engine is evidently the grip of the driving-wheels on the rails, meaning the friction between both, or adhesion, as it is technically called. Let a locomotive-engine be ever so powerful, but take away the adhesion, and the wheels will slip, the engine will draw nothing. This adhesion, derived from the pressure of the weight of the engine, must, therefore, bear a certain proportion to the latter. Its maximum will be obtained by throwing the largest, its minimum by placing the smallest amount of the engine's weight on the driving-wheels. The minimum, however, has, at no time, been a desideratum, as the largest amount of adhesion is required for enabling an engine of a given power to draw a maximum load at a maximum speed. In the six-wheeled American engine (the true offspring of American mechanical talent, as possessing a fore truck, which affords a most opportune facility for turning curves), there is but one axle to bear the adhesion proportion of weight; and this axle is the driving axle. On its position, therefore, depended the amount of weight to be made available for producing friction. As it was found impossible, as well as improper in practice, to place this single driving axle under the centre of gravity, for the purpose of equilibrating the entire weight of the engine, there remained but two other positions—viz., behind and close before the fire-box. To illustrate the effect in both cases, let us suppose two engines, A and B, each of twelve tons weight in running order, with cylinders, boilers, and driving-wheels of the same dimensions, and performing the same amount of duty, on two roads of exactly the same kind. In the engine A, with the driving axle behind the fire-box, it was found that only half of its weight was brought into action for the purpose of producing friction, amounting in this case to $\frac{1}{2} \times 12 = 6$ tons. In the engine B, with the driving axle before the fire-box, two-thirds were found available for the same purpose, equal to $\frac{2}{3} \times 12 = 8$ tons. The ratio of adhesion is, therefore, A : B :: 6 : 8, meaning that the engine B possesses a surplus of two tons in its adhesive power, and, consequently, in its capability of drawing loads. In further examining our subject, another question arises, concerning the effect of the given ratio of adhesion on the rails. In the engine A we have, as mentioned, six tons on the driving axle, and, therefore, three tons on each driving wheel. In the engine B, however, we find eight tons on the driving axle, and, consequently, four tons on each driving wheel. The proportion of weight on the rails is, accordingly, A : B :: 3 : 4. Supposing these two engines to run at the same speed, B, and assuming the stress by impact upon the rails to be represented approximately by the speed multiplied into the weight imposed upon each driving wheel, then each line of rails would be pressed by A, with $3 \times 3 = 9$, and by B, with $4 \times 4 = 16$. This gives a ratio of impact A : B :: 9 : 16, or A : B :: 3 : 4, meaning, for the sake of practical illustration, that the engine B will ruin the rails, take them to be 38 lbs. per yard, after the lapse of nine years; whilst the engine A will produce the same deterioration only after the space of twelve years, supposing the amount of traffic and other conditions to be the same in both cases. Although no actual observations of this nature have been made with regard to the rails, yet the average duration of the wrought-iron ties on the driving wheels, proves the above proposition not to be an incorrect one. The duration of ties on engines, with the driving axle behind the fire-box, has been found to exceed the duration of those on engines with the driving axle before the fire-box; and taking the latter to be nine months on an average, the duration of the first has been found to amount to from twelve to fourteen months. Wrought-iron rails being manufactured in the same way as ties, it can be but a fair assumption, that the duration of rails will admit of the same proportionate ratio given in the above proportion of impact. This brief exposition, backed by the ratio of motive power, A : B :: 6 : 8, and by the proportion of duration, A : B :: 3 : 4, makes it obvious why the diminution of impact in the engine B, possessing a superior power of traction, was found of such great importance, and has thus constantly occupied the attention of the American mechanicians and engineers. In pursuance of this notion, the eight-wheeled engine was started with two driving axles, one before and the other behind the fire-box. Supposing such an engine C in weight twelve tons, in running order, and of the same dimensions as A and B, the weight on the two driving axles was found to be also two-thirds, or eight tons, yet pressing upon the rails, on the four points of contact, only with $4 \times 2 = 8$ tons. The exact proportion of adhesion, or motive power, is, therefore, A : C :: 6 : 8, B : C :: 8 : 8, A : B : C :: 6 : 8 : 8. The ratio of impact, or deterioration of the rails, being C : A :: 8 : 9, C : B :: 8 : 16, C : A : B :: 8 : 9 : 16. From this we may infer that rails lasting but nine years under the performance of the engine B, and twelve when travelled upon by the engine A, will not wear with their ordinary deterioration before eighteen years, when engines of the kind C, are running upon them under the above-mentioned circumstances. I can, therefore, but applaud your mechanism of building systematically on other engines but those with eight wheels—four driving and four truck wheels. However, I feel myself called upon to improve you with the advantages that must necessarily result when the number of driving wheels can be augmented to six or eight, without losing that beautiful characteristic of the American engine—viz., the low offloading track, which is the effect of placing the engine along the track, I think invaluable for the American railroads, with their sharp turns and light superstructures. An engine, B, with three, and an engine, C, with four, driving axles, leading an opportunity to make their whole weight available for adhesion, which then would be due to the maximum weight of twelve tons, in the given case, would certainly possess the greatest motive power, and yet injure

the road in a much less degree. The proportions of adhesion, or tractive power, would be the following ones, supposing in every case that the engine possesses sufficient power to slip her wheels in pulling against a fixed point, A : B : C : D : E :: 6 : 8 : 8 : 12 : 12; and the proportions of impact, or deterioration of the rails, B : A : C : D : E :: 4 : 3 : 2 : 2 : 1. I am aware of all the difficulties attending what I propose, but I feel, nevertheless, confident that "flexible coupling rods," permitting all the axles, with the exception of the main driver, to conform to the radii of curves, are within the pale of practical feasibility. Only on this condition should I think myself justified in preferring engines with a greater number of driving axles than two, were I even inclined to overlook the greater complication than such a mechanical arrangement must require. I reckon simplicity to be one of the cardinal virtues in any mechanical apparatus, and of the most absolute necessity in the locomotive-engine. After this digression, permit me, gentlemen, to come back to the eight-wheeled engine, C, as the subject of my disquisition. Great as the improvement promised to be, in introducing the adhesion engine, the advantages derived therefrom for the preservation of the rails, were, however, nearly lost. The difficulty consisted in the stiff connection of the fire-box, boiler, smoke-box, and pedestals of the driving wheels, with the frame, which acted like a lever. Whenever one pair of driving wheels was raised, by some irregular elevation in the track, resulting from its bad condition, the other pair, in consequence of the springs not acting quick enough to form them down, were momentarily lifted up by the frame, consequently without bearing their due proportion of weight; and, on the contrary, when one pair was passing over a depression in the road, the other again, for the same reason, had to sustain nearly the whole amount of weight originally allotted to both driving axles—the truck wheels always acting as a fulcrum, and the frame, with its fixed pedestals and the axles therein revolving, as a lever. This could not help injuring the road nearly in the same degree as the engine B; nay, the effects were still more injurious to the engine C itself, as in the case of the main driving axle being suspended by the frame, in one of the aforesaid elevations or depressions of the other driving axle, the former received its rotary motion from the pistons without its fulcrum, or adhesion to the rails.

It is but just to say, gentlemen, that you saved the eight-wheeled engine from becoming a mere notion, and that owing to your exertions, it has been brought to such a state of perfection as might make the old six-wheeler, of the kinds A and B, quite obsolete. It is, furthermore, but justice to state, that your special adaptation of the lever, or balancing-beam, to the use of locomotives upon railways, obviated the aforesaid difficulties in such a manner as to leave but little to desire; and here I regret to say, that some of the northern railroads in Germany—notwithstanding the unqualified recommendation of an able engineer as Mr. C. E. Detmold—have not adopted engines with your improvement. I consider the balancing-beam—supported in its centre by a vertical shaft, resting on springs that are attached by the pedestals to the frame, and stayed on its ends by two vertical pins shutting against the two driving axles—as possessing, in an eminent degree, the two indispensable qualities—first, of equalizing the weight on both driving axles, in whatever condition the road may be, and, therefore, producing in an eight-wheel engine of twelve tons, a constant and equal adhesion of eight tons, yet pressing the rails with but two tons; and second, of furthermore diminishing the very ratio of impact as given above, the weight of the engine being suspended in the middle of the lever beam, raising it to fully half the depth of any of the driving axles, in their passage over any short or sudden depression in the track, while the engines A and B must go down the whole depth, as supported by one axle alone, which, by increasing the height of lift, must add to the power of the propulsion, and, therefore, ruin the road even in a shorter period than the proportionate number of twelve or nine years. But this is not alone what distinguishes your engines, the balancing-beam of your arrangement being now used by nearly all the engine builders of note in the United States, after having purchased the patent right from you, which of course bespeaks the great merit and usefulness of your improvement. It is, indeed, the very simplicity of your engine that most engages the attention of even the least observing. Instead of four eccentricities, four eccentric rods, four levers, and a complicated arrangement to put them in and out of gear, by an extra hand lever—thus making three hand levers altogether—you have but two eccentrics, two eccentric rods, no levers, and a simple arrangement of the reversing valve; the whole to be handled by one and the same lever, and this, too, by moving it in exact accordance with the required movement of the engine. It is true that, in reversing, you lose in speed, as the lead of the axle no longer takes place; but this loss I think of no moment, as it only happens when the engine is backing. Besides, the position of your firing-pumps is such as to prevent the freezing of the water—an advantage of great importance with locomotion in northern climes. Gentlemen, this is my candid opinion about your eight-wheeled engine, and you are welcome to make any use of this document. Permit me to end myself of this opportunity to thank you for your kindness, and the frank and open way in which you satisfied my doubts for information; and allow me to assure you that the simplest and most commendable manner in which you spoke of your engine—drawing them to their own merits than to puffing and business recommendations—has most favourably impressed me with your own personal character.

CHARLES MORRIS.

TWO BRITISH ASSOCIATIONS.—The meeting of the British Association will take place on the 17th of August, and there is every likelihood that it will be large and successful. Amongst the distinguished foreigners likely to visit Cork on the occasion, are the Prince of Wales, Professor Huxley, of Berlin; Professor Darwin, of Edinburgh; M. Arago, Professor Dumas, and M. Verneuil (Geologist); Prof. W. Forster (Geologist); Genl. the American and French Ministers, &c.

COMMUNICATIONS WITH ENGLAND.—The Government has appointed Capt. G. S. S. to survey the harbours of Maryland and Pennsylvania, and report on their navigability as port stations. They left this place for Philadelphia, by land, on Tuesday last, and will return before the end of the week. An order has been issued for one of the packets on this station to be at their service to go on with the survey at both places. CHAS. MORRIS.

THE TALACRE IRON AND COAL MINING COMPANY.

The committee of the Court of Aldermen for investigating this almost sighing case, as relates to the conduct of Alderman Thomas Wood, met at the No. 1 Committee-room, Guildhall, on Saturday, the 3rd instant, for the purpose, as stated, of bringing to a close the long protracted inquiry, and also to take into consideration Mr. M. Wood's motion on the subject. Several members of the Court of Common Council were present.—Mr. ALD. BROWN, on taking the chair, said that they had heard the whole of the evidence, and had now met for the purpose of coming to a decision; he believed, however, it was the general wish that no strangers should be present.—Every stranger then left the court, including Mr. Laurie, Mr. Wile, and others.—The proceedings were carried on with closed doors; but we have since learned that, on Mr. Ald. BROWN proposing that a report, which he had drawn up, of the whole proceedings relative to the conduct of Alderman Thomas Wood in connection with the Talacre Mining Company, should be read—Ald. T. WOOD considered that, as it so immediately affected his character, his legal advisers ought to be admitted; and the Court having consented, Mr. Laurie and Mr. Wile were admitted.—The report of Ald. BROWN was then read, which, we have been informed, completely re-opened the case, referring to Chappell's affidavit respecting the Bryn Mines.—Ald. T. WOOD objected to the manner in which it was drawn up, it being full of errors; and requested that he might have a copy of it, to correct them before it was circulated.—This, we understood with much surprise, was immediately granted; and the motion of Mr. M. Wood, which had been seconded by Ald. THOMPSON, in consequence of the illness of both mover and seconder, fell to the ground.—A very noisy, and even personal, discussion ensued, which at length terminated in an agreement to adjourn the inquiry for a fortnight.

A letter from Mr. William Chappell, of which the following is a copy, was read to the Court during the proceedings:—

TO THE MEMBERS OF THE COURT OF ALDERMEN.
Gentlemen,—I observe in the public papers that a notice of motion, by Mr. Matthew Wood, has been given to your hon. court, in the following terms:—"That this committee, having read the evidence laid before it, and the various documents adduced, and the statements of the different parties, relating to the conduct of Alderman Thomas Wood, in relation to the Talacre Coal and Iron Company, is of opinion that, although there has been much misunderstanding between all parties, and Ald. Thomas Wood relied too much upon the representation of others, yet this committee is of opinion that there is nothing to justify a conclusion of his having acted fraudulently or dishonestly in the formation and conduct of the Talacre Company, by which he (as well as others) has been a great loser, and had incurred great responsibilities, founded on the faith of the statements made to him."

I beg respectfully to submit to you: That the investigation proposed by Mr. Ald. Thomas Wood has not ceased to be made. That an examination has been had of his conduct, as a gentleman and a man of honour, upon affidavits filed on a motion necessarily confined to his acts as an attorney, and upon which motion the parties had no opportunity of seeing or replying to his counter statements. That the statements reported in the public papers as Mr. Ald. T. Wood's address to your committee contain untruths. That, if Mr. Ald. T. Wood had intended an investigation into his conduct in this matter, there was, and he knew that there was, a narration, charging him with misconduct, on the minutes of the association—stating the facts so plainly, that those necessarily ignorant of them could understand the case—to which it would, as I submit, have been his duty to give an answer in writing, giving the parties who imposed his conduct an opportunity of replying to that answer. That this narration also exists in print, and has been read in his hearing, so he must have known. That, if he really intends his conduct, as a gentleman and a man of honour, fitted to sustain the honour and dignity of the chair of the City of London, to be examined, the open and honest way would be for him to request me to present a written statement of his conduct in connection with the Talacre Company; for him to answer that statement—giving me the opportunity to reply to it upon paper, and him again the opportunity of remarks upon my reply, and then, if need be, hearing him of some one on his behalf, and not of some one in my behalf; and that, this being a narrative defence and answers on both sides, your hon. court will have a means of judging whether he has conducted himself as a gentleman and a man of honour. Mr. Ald. T. Wood has complained that he had nothing distinct to answer. I have offered it to him. Even now it stands before your court thus—That he is expressly affirmed (if the reported statements be true) that the company, as a company, were in possession of the property from the first; that the possession of Levanon, Baker, and others, was the possession of the company, and as the company's agents were not suffering which he could not have got rid of adverse implications; and yet, if the court will refer to the deed of constitution, which is before them (prepared by himself months after the company had been formed, and before any meeting of shareholders had been convened, he claims in that deed that the whole property belonged to himself and others, and charged the company with £10,000, for that property, which he knew, from the deeds before him, had been donated by the landlord, on the 1st of January in the third year, at a nominal rent, and was, therefore, routed by the landlord as valueless, excepting so far as money expended upon it should make it valuable, and the money which was expended was paid by the company, and he was a party to the withdrawal of the money and the shares constituting the £10,000, before any meeting of the shareholders had ever been held. That of course every one of the shareholders signed after the date of the deed, and, consequently, he knew that their signatures were obtained under this state of circumstances. I respectfully submit to the court the following extract from a report in "Standard" News Letter of the 20th ult. of a trial in Dublin relative to the company:—"Mr. Holmes then offered to prove that the mine was not opened until the year 1835; and that the company sold Bryn coal, and sent it to Dublin as Talacre coal. Judge Campbell considered it as proved already; and would not hear further evidence on that point." I respectfully trust that the conclusion of your court that this fact was strenuously denied by Mr. Ald. T. Wood before you, if your hon. court will permit me to have a copy of the notice of Mr. Ald. T. Wood's address, I will undertake to show, in writing, its untruths, or to come before the court and admit its accuracy. I am, gentlemen, your most obedient servant,
London, June 3. (Signed) WILLIAM CHAPPELL.

IBERIAN MERCANTILE COMPANY.

A company under the above title has just been formed, and offices are opened at 2, Beak-inn-court, Philip-street. The prospectus states that the exigencies of the present times demand some active establishment to route from their lethargy the hitherto dormant energies of the Iberian Peninsula, endowed as it is, by Nature, with every source of prosperity. The object of the company appears to be the investing a large sum of money in agricultural and commercial pursuits in the south of Spain, particularly on the Mediterranean coast, with a view, at a future period, as its capabilities are developed, to turn its attention to mining and metallurgy; thus a wide field for investment will be opened along a line of coast possessing facilities for intercourse with the rest of the world perhaps unrivalled, and in a country whose natural capabilities for the production of wealth are proverbial, and have long been the envy of other nations of the earth. The intention of the promoters, as described in the prospectus, is to start by simple and the best known commercial transactions, and to unfold the company's plans of improvement as it obtains the confidence at which it aims. To command that confidence is the commencement, it is proposed to give an equivalent in value for every share taken, at the option of the party applying, such share to bear interest of 15 per cent. the first year, 10 per cent. the second, and 5 per cent. the third year—without this equivalent, the shares to bear an annual interest of 5 per cent. By this arrangement, the shareholders become free from all risk or loss, the directors alone being responsible. The company will receive consignments of merchandise, and make advances in proportion, buy and sell on commission, and discount foreign bills. A commercial house it is to be immediately opened at Madrid, with branch houses throughout the Peninsula, as well as the Spanish colonies, and the necessary agents and correspondents are being appointed. The proposed capital is £100,000, in 100,000 shares of £1 each.

LEADERSHIP OF DISCOVERY.—A case ("Hutch v. Bettle") was heard at the Hall Court, in the course of the past week, to recover from the directors of the Patent Mining and Compressing Iron Company a balance, laid at £200, alleged to be due by the company to the plaintiff for work and labour as an engineer, as well as for other personal services; which was resisted, principally upon the ground that the services in question, whatever they may have been their extent or value, were chiefly rendered, not to the company, who were not so much in the action, but to other persons, who had the management of the affairs before the company was formed; and that, even if the company were liable, the plaintiff had been more than paid for his services.—The jury adopted this defence to some extent, but found that the money paid in the plaintiff's left concerned a small extent of £5, and some shillings, and they accordingly found a verdict in his favour to that extent.

PHOTOGRAPHIC MANIPULATION.—A pamphlet under the above title has just been published by Mr. Edward Palmer, of Newgate street, which, in a very easy and lucid manner, describes the whole processes of this extraordinary and elegant application of the hitherto unknown, and, even at present, but little understood, powers of light to the most beautiful of the arts. After shortly describing the chemical action of light, more particularly on some substances, the most susceptible of which the photographic cameras for his purposes, the pamphlet then slightly touches the history of the art, the discovery of which (though the darkening of recently precipitated chloride of silver, when exposed to the light, gave the first idea of photography to Wedgwood and Davy) is due to M. Nicéphore, about the year 1816, who continued his experiments for two years, when he became acquainted with M. L. J. M. who had been pursuing the same researches, and in 1819 they published their joint discovery. Daguerre's type plates are taken on copper plates covered with silver as pure as possible, and of sufficient thickness to take a very fine polish, and the most improved method of carrying out the five distinct operations of the process are clearly explained; these operations were, 1. cleaning the silvered plate; 2. rendering it sensitive to light, by exposing it to the vapour of iodine, &c.; 3. exposing the plate, thus prepared, in the camera; 4. bringing out the impression, by exposing the plate to the fumes of ammonia; and 5. setting the picture; the three processes are all so clearly described, that persons desirous to avail themselves of a thorough knowledge of the art, need not be embarrassed by the perfect manipulation (without which, of course, no picture is possible), and the whole requires of the various processes. The entire process of Mr. Fox Talbot is fully described, and the pamphlet closes with a list of the prices of the various articles required in all the processes, and forming a complete guide to all who wish to become initiated in these very beautiful and delicate arts.

THE MINING JOURNAL,
Railway and Commercial Gazette.

LONDON, JUNE 10, 1843.

* Parties desirous of ordering the *Mining Journal*, can do so, either direct to the office, or through any news-vender or bookseller in town or country. Notices of irregularity in its delivery are requested to be forwarded to the office, where every endeavour will be made to rectify the cause of complaint.

and deeply is it to be deplored that this state of things, of so long

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a continuance, is at this moment without the slightest prospect of improvement.

Up to the present time, despite the serious losses to which the ironmasters have been subjected, we are not aware of any defalcation, to any considerable extent; nor do we find that the *Gazette* affords evidence, which would lead us to the conclusion that they have been, in any degree, affected. Whence does this arise? All the iron made is at a heavy loss, if sold, and if kept in stock, a serious locking up of capital is necessarily attendant. But, we would further ask, whose funds are thus applied? We may, we think, unhesitatingly reply, that in but few instances are they those of the ironmaster, but rather those of the banker, who, possibly, to support the credit of the firm, as well as to cover advances previously made, affords a helping hand, in the hope that an improvement will take place, but of which, we fear, under present circumstances, with heavy stocks on hand, there is but little prospect. The case, then, simply stands thus:—If funds, or advances, are withheld, the ironmaster must suffer; should a re-action in price, as well as in demand, take place, then both may be saved; but, we repeat, that, with the present unhealthy appearance of the Iron Trade, we fear that the loss must be borne by the ironmaster or banker, or, perhaps, both, without some remedial measures shall be adopted, and which we can only imagine by a reduction in the "make." This alone can restore the trade to a healthy state; and here, we would remark, that, even were such a course to be effectual, it must not be confined to the limited period of six months, but must be permanent, till our foreign trade be restored and the consumption at home increased.

We have already noticed the rapid advances made by the Scotch ironmasters, whose make, in 1830, was only 37,500 tons per annum, but which has now increased to 360,000 tons. We fear that, with this large increase, although possessing certain advantages, to which we have already alluded, they cannot be in a much better position than the Staffordshire and Welsh ironmasters.

In South Wales, it is true, that the *black-band* ironstone has been discovered, which, it is to be borne in mind, with the aid of hot-blast, has placed Scotland in its present position as regards the Iron Trade; but we are not in possession of such minute information as would warrant us in assuming that even this discovery will meet the present evil—that of excess of make, but rather tend to increase the unsatisfactory state of the trade, although, to certain individuals, the discovery may be attended with pecuniary advantage, from the facilities, or economy, afforded.

In conclusion, we have only again to reiterate the expressions we have already used—viz., that nothing but a reduced make can restore the trade to a healthy state; this, however, it must be manifest, cannot take place unless the Staffordshire, Scotch, and South Wales ironmasters will, *bona fide*, enter into an arrangement to such effect. Will they do so?—Time will prove; we, in the mean time, watch the movements of the iron trade with interest, if not anxiety.

Since writing the foregoing, we have met with the following paragraph in the *Globe* of last night:—

The most singular shipment (referring to the arrival of the *Great Western*, however, is that of a considerable quantity of iron ore. Considering the depressed state of our own iron trade, it is difficult to imagine that there can be any remuneration to importers from the United States—but the mere attempt is sufficient to attract notice.

It was not our intention to have offered any further comments on the observations of the *Commercial Gazette*, with reference to mining in Spain, but as he seems determined in having the last word, to charge us with inconsistency, we must needs repeat, that, with the very best of intentions, our contemporary only further exposes himself to the charge of "innocence," or wilful stolidity; and, to use his own words, "every effort to retrieve himself sinks him deeper in the mire." The vaunting and self-importance of our friend in the West are infinitely amusing; and, were it not due to ourselves to say a word or two, we should allow to attempt his flight in the regions of fancy and imagination; but, as he tells us "that we have information from other sources," and, further, "that we know who are the parties concerned," we can only smile at the following observation which occurs:—"We declared our distrust of the facts." Now, had our contemporary said he distrusted the assertions put forward by correspondents or ourselves, we should then have known what course to pursue, and as we cannot give him equal credit for his assertions being facts, we shall use our Editorial pen in such a manner, that we will be as merciful as his remarks are harmless in effect—however mischievous they might be in intention.

We are told that "the statements which appeared from week to week in the *Mining Journal* were anonymous." Now, it is unnecessary for us to say, that any Editorial observations which appear in the *Journal* are from our own pen, and, as such, we are responsible for their accuracy. We do not adopt the course which it is sufficiently clear is pursued in some instances by others—that of decking the daw in borrowed plumage—and, therefore, the shafts (to use a mining term) of our factious friend fall harmless, whether they be formed from the wing of the goose, or any other of the feathered tribe. We must, however, to the point, for our columns are not based on ridicule, but have for their object directing attention to the investment of capital, mining enterprise being one of the pedestals on which the wealth of our country rests.

Our contemporary again states his belief that the "facts" put forth were "with a view to a bubble company." It is only necessary to repeat that the adventure to which reference is more directly made is entertained by parties of the first wealth and standing in the mining and commercial world, and hence the "belief" or assertion of our contemporary falls harmless.

We, however, so fully concur in some of the opinions he expresses that we have quite his words:—"But it is our duty to call attention to the unsoundness of speculations which enrich the few projectors at the cost of the duped adventurers, and which bring discredit on mining enterprise." There does not appear to us to be room for comment on the expression of a sentiment in which we so cordially agree, and hence the absence of any remark, except, *ex post facto*, that we may observe, no evidence has been afforded to show the "unsoundness" of the speculation to which attention is more immediately directed. Our friend complains sorely because our correspondent, who was located in the immediate vicinity of his office, did not call upon him:—"Why did he not call, and see us?" enquires the Editor. This bombastic appeal forcibly reminds us of certain passages in *Sherridan's* admirable comedy, farce, or call it what you will, of *The Critic*, or a *Tragedy Rehearsed*.

Our contemporary, after quoting our words—"when articles appear in our columns which assume an editorial character, we at once adopt them, and are answerable for their consequences"—observes, "and yet he tells us, this week, that he does not know the locality of the Virgin del Carmen Mines, the most attractive article in the whole catalogue; where, then, is the worth of his guarantee?"

We will tell him. The article in question was from a correspondent, and, as such, inserted. We were not aware of the immediate locality of the mine, although the article states it to be one of the branches of "the famous ridge of Almagro." We beg to refer our contemporary to the authority on which he presumes to write; and, in case of not requiring the desired information, we think a reference to the map of Spain might be found useful—and which, he will find, is not exactly

—An Island, called *Monrovia* and *Trinidad*—

However, we doubt not that, with application, he will discover its position on the map of Europe. We may also refer him to the work, entitled *All Mines Reported*, by B. MICHAEL ANTON YAGAN, which affords a general description of all the mines opened in Spain.

and the mining ordinances, the mines reported upon therein being no less than 344 in number, and embracing those of gold, silver, copper, iron, lead, tin, quicksilver, calamine, cobalt, antimony, arsenic, and other mineral products, or we may refer him to an interesting work, entitled *Minerals in Spain*, by Captain S. S. COOK, R.N., F.G.S., &c., in which we find the following passage, and which we adopt at the moment, as applying more particularly to one district—to which, indeed, in the first of the series of papers on the subject of mining in Spain, we directed attention—the mines of Linares, or, as formerly called, those of La Mina de la Cruz:—

At Linares, in the lower part of the Sierra Morena, are mines of lead and copper, of great value. The Moors wrought the lead, but appear to have left the copper as unused. It is of excellent quality, and is chiefly in the form of blue and green carbonate. The lead of Linares was used by the Romans, and afterwards by the Moors; but these Africans were bad miners. It is now chiefly consumed in the interior, where they boast that it is of finer quality than that of Gador. In both these districts—of which that of Linares occurs in granite, and of Gador in limestone—it is in the form of galena.

The admitted "innocence" of our contemporary, as relates to smelting in Spain, we briefly noticed last week, and, as it will be seen, on reference to the *Journal* of that day, that only 8 tons 15 cwt. 1 qr. 8 lbs. of ore under 15 per cent. produce, was exported to this country, although the returns from "Cuba—a Spanish colony," amounted to no less than 17,187 tons, we think ought to satisfy him that, while it may be attended with economy to bring Cuba ores to England, it might even be politic to smelt Spanish ores at home. We do not, however, propose entering on this question, for we are ready again to admit our want of information, rather than to exhibit our innocence, so far as regards the extent of produce, and consumption in that country, while we are satisfied, judging from the Linares Mines alone, which are raising copper ores from one pertinence, equal to 1400 tons of metallic copper annually, exclusive of lead, amounting to an equal quantity, that other mines which have been for years, if not centuries, neglected, will be resumed with prospective advantages. We do not feel it necessary to say more, our remarks of last week, in a great measure, anticipated our contemporary, for we intuitively wrote a reply to his remarks, ere they had been submitted to us. We are free to adopt, and ever have so done, the Cornish motto—"one and all," although, in the present sense, its application may be deemed of a wider nature than our friend would wish us to observe.

The proceedings at the Court of Aldermen on Saturday last pose but little novelty and interest, beyond the presentation of a letter from Mr. CHAPPELLOW, a copy of which will be found in another column—another scene of the farce being performed. The statement, however, put forward by Mr. Alderman BROWN, as we are given to understand, caused Mr. Alderman THOMAS WOOD to seek for delay, more especially as two of his supporters, the mover and seconder of the proposed resolution, were absent through illness. He, moreover, was not prepared for Mr. CHAPPELLOW's letter, which—containing some little particulars that, we doubt not, will attract the notice of the Court of Aldermen, on their next assembling—is well worthy the perusal of those who either embarked in the "promising adventure," or who may feel an interest in the exposure of abuses, are disposed to devote sufficient attention to a further notice of the "Talacre Job."

A meeting of the adventurers in the Carn Brea Mining Company took place at their offices, on Thursday, the 5th instant, but, as our reporter was refused admission, it is hardly necessary to say, that we are not in a position to satisfy our readers or absent proprietors in conveying to them the result of the proceedings.—We are given to understand that the meeting was of a stormy nature, the committee not agreeing as to the nature of the report—a circumstance at which we are not surprised, when we consider the elements of which it was composed. Some sharp words arose between the accused and one of the committee; however, in the end, we believe, it was resolved that the meeting should adjourn until Tuesday next, then to appoint a board of direction, consisting of seven shareholders, on whom should devolve an examination into the past, as well as having reposed in them full powers of control for the future.

It is to be regretted that the meeting should have determined on excluding our reporter, as it is only natural to suppose that the party most implicated in the charges—to institute an inquiry into the truth of which was the object of the committee—would, if innocent, have been most forward in the expression of a desire that publicity should be given to the proceedings; but, as we are well informed—this did not suit. We leave to our readers to guess the cause. We shall, doubtless, learn the result of the meeting of Tuesday next, when we may have to say something more on the subject.

We direct attention to the advertisement, in another column, bearing the signatures of parties of the first respectability, having reference to "the course pursued towards the Greenwich Railway Company," as treating on the principal points of difference which exist between the Croydon, Dover, and Brighton, Railways, and that company, and which are highly deserving attention, inasmuch that we learn the decision of the committee of the House of Commons will form subject matter of appeal to the House of Lords—and, as appears to us, on perfectly justifiable grounds, however much the directors of the Greenwich Company may be open to censure for the firmness—or, as some would term it, the stubbornness—they have displayed.

EAST INDIA BANK.

The system of banking, which has been carried out to such great advantage at home, having found its way into our colonies, New South Wales, Australia, British North America, the West Indies, and even into the island of Ceylon, it is, perhaps, extraordinary that our possessions in the East Indies should have hitherto remained without a bank, connected with our money establishments at home. With all its wealth, India has not yet enjoyed the advantages which its position naturally demands, the circulating medium having hitherto been confined to itself, and the exchange having been effected by agency houses, the mismanagement of which has always kept the affairs of India in a really unimproved state, and several parties have realized immense fortunes, at the expense of unfortunate speculators in Indian property. By means of the metropolitan colonial banks, highly important advantages have been secured, both to the colonies and the parent state; the security of depositing specie is greatly diminished, security of capital in one spot is immediately remedied, the interest of money lowered, the rates of exchange steadied and equalized, trade augmented, confidence established, the local banks in our colonies strengthened and augmented, a profitable investment for capital opened, and, by expediting the business and movement, the latter develop all his energies and access to the advancement of his own immediate district. These advantages, possessed by our other colonies, have hitherto been denied to India; having, perhaps, a much more powerful claim, with a population of 100,000,000, and a mercantile trade of 10,000,000, per annum, it is surprising that the mutual benevolence should have been so long confined to a few agency houses, particularly after 1838, in which year its failure occurred, to the enormous amount of 14,320,000l. It was the influence of the East India Company, and the agency establishments, which created the all but established Bank of India a few years ago, but with the great facilities given to commerce, which are daily developing themselves, with a strong sense made out from former evidence, now greatly increased, and with a memorial from the Bombay Chamber of Commerce, we trust there is now a large field for the East India Bank, founded on the same principles, and with still greater facilities than the Bank of India, with, on this occasion, a charter of incorporation, and thus gain a victory over undue influence and monopoly.

JOINT-BANKS CONTROVERSY.—In the House of Commons, last night, Mr. W. Gladstone proposed to Monday next the appointment of a committee on joint-bank concerns, and gave notice that he would submit the same to the Committee for that of Mr. Bouverie.

PATENT ELECTRIC FARMING CONTACT.—This company, we find, is proposing to public subscription, orders being, at this moment, circulating for the Government; as its appliances, we understand, is not confined to agriculture, but also rendered available for the purposes of navigation, on which we may have a word to offer on another occasion.

GEOLOGICAL STRUCTURE OF CARDIGANSHIRE—No. III.

If it were possible to have the whole of the clay slate scooped out, or removed, which forms the bed, or base, part of the subterranean body of this mineral district, we should have an immense number of large plates, or walls, differing from each other in size and composition, traversing it from east to west, or within a few degrees of this direction, crossed by channels of indurated clay slate—composed of the same elementary matter, but altered in its appearance and hardness, in a very great degree, from the surrounding slate—nearly at right angles. These lodes and channels are again traversed, in an oblique direction, from the south-west to the north-east, by large plates of quartz, without any mixture of other mineral. The channels of altered clay are studded with patches of porphyry, at intervals, along their direction, and the veins are productive of metals only in contact with these channels; while, in most places opposite to, or in contact with, the dead slate, they are mere clay joints—in some places so very insignificant as to be untraceable on the surface, or by level.

We may now consider that we have the giant anatomised, and lying before us for description. It is composed of three principal parts, consisting of numbers of plates, or walls, each holding its direction, and being in its composition perfectly dissimilar from the others. We will first take the north and south channels, the best known of which are three—the western is the Grogwinion channel; the middle, the Logylas channel; and the eastern, the Cwmystwyth channel. They are so nearly of the same component parts as to require but little description.—The Grogwinion channel is broken by a body of porphyry, about a mile to the northward of Ystrod Mawr (the old and celebrated school); the Logylas channel is broken by the same material to the south of the Llewellyn lode, and its rocks cover the south face of the hill from the back of the lode to the bridge of Pontrhydygroes, on the bed of the Ystwyth; of the Cwmystwyth channel there is nothing to say, but that it steals its way through wilder and more majestic mountain scenery than the other two, its range being among the crater-like hills of Cwmystwyth, and through Plynlimon to the northward, and on to Cadair Idris and Snowdon. These channels of ground, to a casual observer, offer nothing, either on the surface of the ground, or below, to distinguish them from the ground surrounding them; but, under closer scrutiny, the whole fabric is changed; the particles are more crystallised, the rock is more sonorous, and the range of its direction is marked with something of a rift of nature, and entirely different from the mass of aluminous and silky-jointed shale, through which they travel; and, when we come to remark on the result where they touch the lodes, it will be seen how immense is the power, and how wonderful the effect produced by them, or through them; indeed, to mistake them for the country in which they exist, would be to mistake the immense mountains of Plynlimon and Cadair Idris, which form their eastern boundary—although it is not unfrequently the case that you hear scientific men denying their existence.

The oblique lodes of quartz require no description, being masses of silica, as if they had been filled by the superabundant silicious matter of the country. There is also a small vein of alum at Pontrhydygroes, perhaps of analogous origin; but, without any speculation on this subject—now that we see the curious net-work of these lodes and channels, containing iron, sulphur, lead, lime, zinc, silver, and other metals and minerals, with water—it would be no great stretch of fancy to imagine the whole district an immense electric globe.

We will now go to the more useful part of our task, and describe the lodes—the really indispensable provisions, or metallic storehouses, evidently planned immediately for the use of man, as he, without them, would be devoid of the greater comforts of his existence. It would be preferable to begin to the south, and take the veins, in passing, to the northward; but Logylas and Cwmystwyth being the principal mines of the neighbourhood, on the same lode, we will describe this vein first.—The Logylas vein has only been worked in two out of the three productive channels of slate—viz., in Logylas and Cwmystwyth; and, in these two mines, it has been worked for centuries, always providing sufficient lead to serve each succeeding generation; and it may now be said that scarcely the crust of the vein is broken off, so little has been done—notwithstanding the enterprise of miners of all nations, from the Phoenicians to the present time, to exhaust it. And mining, in its present state, is capable of laying open resources which will doubtless, on this vein alone, last through a very protracted future. The direction of this lode is a few degrees to the north of east; its underlie is 38° southwards from perpendicular; the lode is unwrought in the Grogwinion channel, but it is seen there on the surface, with such indications as leaves no doubt that time will see a great mine, with extensive machinery, upon it. Its size, in its bearing parts, is from four to six feet wide; but in Cwmystwyth, where it is joined by other lodes, it bears for a width of upwards of twenty feet, in places. Its lead is slightly argenteous, containing, mostly, not more than 2 oz. of silver to the ton; at Logylas west, approaching the Grogwinion channel, it yields 10 oz. of silver to the ton of lead—this is in the direct line of the porphyry. The vein contains very beautiful specimens of carbonates of lead and lime, in the Logylas Mines; and, in the neighbourhood of Cwmystwyth, some sulphur. The galena, in general, is slightly mixed with black-jack; but less so than in several other lodes of the district; and it has yielded its ore from the surface of the mountains to the lowest depths to which it has been worked.

IMPROVEMENT IN THE PROPULSION OF STEAM SHIPS.—Mr. Robert Smart, of Bristol, has taken out letters patent for apparatus for propelling steamers, which promises (as, indeed, experiment is said to have proved beyond doubt) to give to all steamers fully a hundred per cent. speed, and, however surprising it may appear, the wheel is many hundreds lighter than the common wheel. It is not merely so subject to accident, inasmuch as vibration and concussion in the coal-bunkers, and has the extraordinary power of checking a ship in half the time required with any other wheel, by which collision will often be prevented. These advantages are, according to the testimony of scientific men, certain to be derived from this invention; and if this be the fact, then steam navigation has, from this time, received a greater boon than any since its commencement. The most scientific men have approved of the plan, and prefer them to anything ever yet produced as propellers.

FLOATING BREAKWATERS.—Captain Taylor's floating breakwater, now standing on the shore at Richardson's timber-yard, Commercial road, has been exhibited to several noblemen and gentlemen connected with the Admiralty, when the presence described at length the construction of this massive structure, and demonstrated, to the apparent satisfaction of all, the decided superiority of his invention over the stone breakwater in expense, and over the cylinder in efficiency. The distinguished party examined every part of the section with attention, proposed several questions, exhibited the utmost satisfaction at the explanations offered by Capt. Taylor, and expressed themselves very decidedly as to the urgent necessity for constructing afloat breakwaters on our coast. We understand that the machine now in Richardson's yard will shortly be shipped for France, and moved, with several more of equal dimensions, to the foreign workshop, off the port of Marseilles.

ARTESIAN WELLS.—We understand that it is intended to carry the bore for the Artesian well in the Garden of Plants to the depth of 500 or 600 metres, whereas that at Grenelle is only 350 metres deep. The object of placing on low in to bed water of a high temperature—from experiments founded on observations made by M. Arago and Walferden, at Grenelle, that the temperature of the water increased in warmth one degree at every 25 metres depth, and, consequently, at that of 500 or 600, must be at from 120° to 130° centigrade (about from 250° to 260° Fahrenheit), with which the hot houses of the tropical climate, and also the lodges of the animals in the menagerie, and even the hospitals in that quarter, may be warmed in winter.

ROYAL POLYTECHNIC INSTITUTION.—The anniversary meeting of the proprietors of this popular and useful institution was held in the hall room of the Institution, Regent-street, on Saturday last. From the report of the committee of management, read by the secretary, it appeared that several noblemen and gentlemen had recently formed a class for the purpose of obtaining information of the steam-engine, which class was chiefly composed of engineers in her Majesty's navy, who wished to study steam navigation. The committee had to congratulate the proprietors upon the state of their affairs, and upon the circumstance that they were now enabled to grant a dividend of 5 per cent. per annum, clear of the income tax, and of placing the surplus profits in the reserve fund. The report having been adopted, and thanks given to the officers, the meeting separated.

RECENTLY DISCOVERED.—Last week, whilst some mines were engaged engineering Cornhill, which is situated on the borders of this county, while a few miles of Goring, they came in contact with a mine, which, on examination, proved to be not far long and six and a half feet high, the greater part being cut through the mill race. The mine is near the base of the Cornhill, and the mine, instead of presenting a horizontal plane, sharply ascends to its termination. That it has been the work of art, and not of nature, is in its fairly proved from the fact, that at the end, where it is bounded by the mill race, there is a large bench at the base, in which there have been "jumped," and are now ready made for blasting; but the mine is situated in the neighbourhood of the Cornhill, and gives an information whether on the surface, its entire history being described in the next of time.—*Worship Independent.*

NEWSPAPERS.—The subscribers in Germany are eager to with activity. More than 60,000 individuals are now enrolled in the Vienna Foreign List, which is reported to be finished by 1902.

NEWSPAPERS.—The Germans have now purchased a land (except two or three trifling parcels) for the completion of the Ansbach railway line. It has been made with the charity trustees, so that none will not go to a party or antiquarian.—*Western Times.*

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of carbon. A comparative list of weights of the coals of England to France is added, according to which the best of all, the Newcastle coal, contains only 10 tons per cord, of carbon, and the best of the French coals 18 tons per cord. Thus the coal of Newcastle is 80 per cent. as good as the best French coal. — *German paper.*

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